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ABSTRACT

Estimates of the current national dropout rate during grades 9-12 ranged between 25 percent and 30 percent. Studies were undertaken to determine the characteristics of dropouts; the consequences of dropping out of school; and associations between dropping out and specific curricula, including the occupational curriculum. Because of methodological problems, some studies were inconclusive or suggested that the occupational education curriculum was more associated with dropping out than were the general or academic curricula. Recently, more carefully controlled studies indicated a positive relationship between involvement in an occupational curriculum and retention of the at-risk student. Studies have identified components of the occupational curriculum most associated with retention, such as teacher control of curriculum, small class size, individualization, student recognition, external ties, and work experience. Improving the retentive quality of occupational education should include continued encouragement of academic skill acquisition in the occupational education curriculum; encouragement of career exploration and guidance programs and early, relevant introductory occupational education experiences; facilitation of broader student options for enrollment in job-specific training courses by the tenth grade; and provision of appropriate and relevant work-study experiences. (A six-page list of references is included in the document.) (CML)

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AT-RISK SECONDARY STUDENTS AND THE IMPACT OF OCCUPATIONAL EDUCATION

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Highlights

* The national dropout rate during grades 9-12 is estimated at 25-30%, although difficulties exist in obtaining accurate, reliable dropout data.

* In Nevada, 4,780 students in grades 9-12 dropped out of Nevada schools in the 1988-89 year. A conservative estimate of the cost to society over the course of these individuals' working lives is $124 million.

* Dropping out of school results in a variety of adverse economic, social, and personal consequences, although dropouts initially experience increased feelings of control over their own outcomes in life.

* Extensive research has isolated various demographic, familial, personal, and education-related factors that can be used to identify at-risk students, but these factors do not help predict who, among those at-risk, is likely to drop out of school.

* One factor that does discriminate between at-risk students who complete high school and those who drop out is their amount of participation in occupational education courses, especially courses that provide specific job skills.

* A number of characteristics that are associated with retention of at-risk students are more prevalent in occupational classrooms than in academic ones.

* A number of areas for improving the impact of occupational education on at-risk student retention can be derived from review of the research findings.

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Abstract

Estimates of the current national dropout rate during grades 9-12 range between 25% and 30%. This unacceptable rate instigated a number of studies attempting to determine the characteristics of dropouts, the consequences of dropping out of school, and any association between dropping out and any specific curriculum, including the occupational curriculum. Because of various methodological problems, a number of studies were inconclusive or suggested that the occupational education curriculum was more associated with dropping out than was the general or academic curriculum. Recently, more carefully controlled studies indicate a positive relationship between involvement in an occupational curriculum and retention of the at-risk student. In addition, these studies have identified important components of the occupational curriculum most associated with retention, areas for improvement, and other components that, when used in conjunction with comprehensive occupational programs, may be maximally effective in retaining the at-risk secondary student.

AT-RISK SECONDARY STUDENTS AND THE IMPACT OF OCCUPATIONAL EDUCATION

Background

The Extent of the Dropout Problem

In recent years, an increasing concern with unacceptable dropout rates nationwide has been evident. Current estimates indicate that between 25 and 30 percent of students who begin high school do not finish (Sewell, Palmo, & Manni, 1981; McDill, Natriello, & Pallas, 1985; Weber & Mertens, 1987; Wittebols & Copple, 1986), although estimates vary widely according to location and among certain ethnic groups (Fernandez & Shu, 1988). Further, numerous concerns surrounding the difficulty in obtaining reliable dropout rates have been voiced recently (e.g., Hammack, 1987; Morrow, 1987). It is uncertain if the current rate has stabilized, is escalating, or is decreasing.

Certainly, when compared to a 43% dropout rate observed two years after the opening of the first publicly supported high school in 1821 (Stevens & VanTil, 1972) and to the 11% of all school-age youth who were actually in school at the turn of the century (Thornburg, 1974), attendance in the nation's secondary schools is higher and dropout rates are lower (Grant, 1973; Buxton, 1984). Nevertheless, present figures on high school dropouts are disturbing.

In addition, some researchers believe that the recent educational movement, sometimes referred to as "the excellence movement," exemplified by the National Commission on Excellence (1983) may be unrealistic in terms of expecting all students to learn the same core curriculum. It is plausible to assume that the movement may enhance dropout rates in the future (Kaplan, 1985), although this point has been subjected to criticism as less significant than other factors (e.g., Bryk & Thum, 1989), and initial indications of impact on dropout rates are mixed (e.g., General Accounting Office, 1989). Whether the excellence reform movement has increased pressure on at-risk students to drop out, there is concern

that such students apparently have not benefited from the accompanying increased remedial academic programs. (See, for example, Technical Assistance for Special Populations Program, 1989, and see discussion on pg. 23).

It is clear that attention should be directed to future research related to actual dropout rates and to the methodologies yet to be developed that will provide individual school districts with the means to reliably assess their own dropout rates in order to adequately appropriate money and resources to address the problem. A number of illustrative proposals for assessing valid and reliable dropout rates have been presented (e.g., Morrow, 1987), including statewide efforts to assess dropout rates in Nevada (Carpenter, 1989a, 1989b, 1990).

Contributing Factors

Numerous reports have examined the characteristics of those individuals who drop out of school and the principal conditions that contribute to placing students at risk of dropping out of school (e.g., Ekstrom, Goertz, Pollack, & Rock, 1986; Weber & Mertens, 1987; Wehlage & Rutter, 1986). Factors contributing to dropping out of school include:

Demographic factors

- low socioeconomic background minority group membership
- single parent homes, typically with working mothers
- one or both parents not completing high school
- males
- geographic region (especially the South and West)
- attending urban public schools
- some form of handicap or limiting condition

Family Support

- little family encouragement for staying in school
- minimal parental concern with, or supervision of, student's activities

- few study aids present in home
- infrequent discussions with parents regarding future educational and/or employment plans

Personal and Social Psychological factors

- pregnancy and/or marriage
- delinquency and disruptive behavior
- low self-concept and social maturity
- low internal locus of control (belief that life outcomes are not under their control)

Education-related factors

- poor academic performance (grades & standardized test scores)
- poor basic skills in reading and math
- lower intelligence scores
- lack of interest in school and school work
- feelings of alienation in relation to school, teachers, and peers
- frequent absences and tardiness
- lower level of educational aspiration
- spending less time reading and doing homework
- infrequent discussions with teachers and counselors regarding future educational and/or employment plans
- repetition of one or more grades
- less participation in extra-curricular activities
- friendships with others whose attitudes and behavior are negative toward school

This list is not exhaustive, but reflects considerations generally agreed upon by numerous researchers. All actual dropouts may not exhibit all of these characteristics. Further, questions can be raised about the actual contribution of certain factors. For

example, Wehlage and Rutter (1986) cite evidence that suggests that, once the influence of family background – especially socioeconomic status – has been controlled, race is not a variable that predicts dropout. With regard to race, Fernandez and Shu (1988) suggest that many Hispanic dropouts simply do not fit the profile of a typical dropout based upon the preceding variables and defy predictions based on these variables. The reason for this apparent discrepancy remains to be investigated. However, most dropouts do exhibit some combination of the factors above.

Another note of caution with regard to characteristics and conditions above is that they reflect differences between individuals who drop out of school and a heterogeneous group of students who do not drop out of school. The latter group includes individuals who display many of the characteristics reported here for dropouts and yet complete high school. Thus, the factors noted here are those that merely place a student at-risk of dropping out of school. The extent to which such factors are present is not an especially strong determinant of whether or not an at-risk student drops out. That is, students who drop out of school do not show an especially greater (or, in some cases, lower) level of any one or group of these factors than do at-risk students who complete school. (See the discussion of Weber's, 1986, findings on p. 15 below).

The primary means of isolating the factors given above is by comparison between dropouts and students who remain in school through graduation. Tindall (1988) provides an excellent summary of factors isolated through opinion research with educators, social workers, and advisory commissions. In addition to the factors mentioned above, his review includes consideration of substance abuse, lack of goals or career options, lack of motivation, child abuse and neglect, and lack of links between the school and community. In an interesting study using data from the High School and Beyond (HS&B) national longitudinal study sponsored by the National Center for Educational Statistics, Ekstrom, Goertz, Pollack, & Rock (1986) studied the reasons given by dropouts themselves for

dropping out of school. The respondents could select as many of the reasons as they believed were relevant. Table 1 presents the major reasons given for dropping out by sex of the respondent.

Table 1. Major Reasons Given for Dropping Out of School

(Percent responding "Yes" to each item)

	Males	Females
Did not like school	35	31
Poor grades	36	30
Offered job and chose to work	27	11
Getting married	7	31
Could not get along with teachers	21	9
Had to help support family	14	8
Pregnancy	–	23
Expelled or suspended	13	5

Adapted from Ekstrom, et al (1986)

Consequences of Dropping Out

A number of studies have examined the impact of dropping out of school, primarily from a socioeconomic and an individual perspective. It is estimated that, by age 25, even employed dropouts earn only two-thirds of the income of graduates (Ranbom, 1986), and that the life-time income for dropouts is approximately 70% of the income earned by male graduates who do not attend college (Governors' Study Committee on High School Dropouts and Unskilled Graduates, 1981). Further, there are indications that the earnings of high school dropouts are diminishing over time, as much as 42% less than their dropout counterparts 15 years ago by one estimate (Far West Laboratory, 1989). The availability of low-skill jobs traditionally occupied by dropouts and unskilled graduates will continue to decline (Guiton, 1989). The Appalachian Regional Commission (1987), for example, reported that only one in six jobs is suitable for a high school dropout. By one estimate, low-skill

jobs will comprise as low as four percent of available jobs over the next ten years (Warnat, 1988).

Jones (1977) reported that the loss in government income in 1969 associated with 25 to 35 year-old males who had not completed high school was $71 billion dollars nationwide. It also was estimated that the welfare and unemployment costs associated with an insufficient education was $3 billion dollars. Weber and Mertens (1987) cite research suggesting that a conservative estimate of the costs of the dropout problem nationwide to be $20 billion per school class cohort and $26,000 per dropout during his or her working life. Depending upon assumptions made about future earnings and loss projections, the estimates rise to $200 billion for each class and $200,000 per dropout.

Carpenter (1990) reports that 4,780 students in grades 9-12 dropped out of Nevada schools in the 1988-89 school year. Applying the conservative per dropout estimate cited in Weber and Mertens and assuming that these students do not return to complete their education, the societal cost of the dropout problem generated by those individuals alone would be over $124 million over the course of their working life.

There is evidence suggesting that an increased amount of criminal activity also is associated with not completing high school, although no causal relation has been demonstrated (Novak & Dougherty, 1979). In addition, reviews of police statistics indicate that dropouts are six to ten times more likely to be involved in criminal acts than are students who are enrolled in school (Jones, 1977).

On an individual level, Los Angeles Unified School District's Dropout Prevention/ Recovery Committee (1985) suggests that dropping out augments the sense of alienation, frustration, and disappointment felt by many of those students who leave school. This may be due to the lack of a basic education which interferes with securing and maintaining successful employment. Also, various health related disorders, particularly high blood pressure and incidence of heart attack, have been observed in dropouts and may be due to

an increase in stress (Buxton, 1984).

Although it appears that a number of seemingly detrimental effects are associated with not completing high school, Natriello, Palias, & McDill (1987) suggest that more research is needed in order to fully identify and comprehend such consequences in contemporary populations of dropouts. They point out that there is a dearth of studies using nationally representative samples and thus conclusions should be drawn cautiously.

This caution may be particularly pertinent to conclusions regarding the social psychological impact of dropping out of school. Using the national HS&B data and comparing student responses as freshmen and their responses two years later, both Ekstrom et al (1986) and Wehlage and Rutter (1986) failed to find decreases in self-esteem among dropouts or increases in the extent to which they viewed their outcomes in life as being out of their control (external locus of control). In fact, dropouts displayed slightly (but not statistically significant) higher self-esteem and a statistically significant increase in sense of self-control over their outcomes in life (i.e., internal locus of control). It may be that the two year period between measurement in these two studies was insufficient time for the onset of the detrimental social psychological impact of dropping out of school noted in other studies. Nevertheless, these findings point to the inadequacies of the traditional academic reward structure for these individuals. Apparently, as Wehlage and Rutter note, these students gained a greater sense of internal control over their lives through participation in adult activities than in performing school tasks at which many did not excel.

At-Risk Students and Occupational Education

In recent years, many programs have been developed in an effort to reduce the dropout rate. Mann (1987) and Tindall (1988) provide excellent overviews of a number of programs that have been instigated for that purpose. Unfortunately, there is a paucity of well-controlled studies that would indicate the effectiveness of the various individual

programs in progress across the country.

One area that has been carefully examined by researchers is the occupational education curriculum. The impact of participating in occupational education on various outcomes are well documented in the research literature. Economically, for example, secondary students with high concentration of occupational education are more likely to have jobs upon completion, to have higher annual incomes, and to exhibit lower rates of unemployment (Campbell, Basinger, Dauner, & Parks, 1986; Gardner, Campbell, & Seitz, 1982). Studies performed in Ohio (Ghazalah, 1989) and Wisconsin (Strong & Jarosik, 1989) provide evidence that the economic advantage of occupational education graduates grows with time in the work force. Further, the economic benefits of occupational education are especially pronounced for disadvantaged youths (Bishop, 1988) -- clearly an at-risk population. In this section, studies investigating the impact that the occupational education curriculum has had on reducing the dropout rate will be examined.

The Research Controversy

Attempts to ascertain the relative dropout rates associated with different curricula (i.e., general, occupational, and academic) were begun in the late 1960s and continue to the present. Review of this literature reveals the complex relationship that occupational education has in retaining at-risk students and the methodological problems associated with investigating this relationship.

Early studies attempting to investigate the association between various curricula and dropout rates (e.g., Coombs & Cooley, 1968; Grasso & Shea, 1979), although generally showing a positive relationship between the occupational education curriculum and retention, have been difficult to interpret. Methodological problems inherent in these studies prevent them from providing definitive conclusions (see Mertens, Seitz, & Cox, 1982, for a more complete overview). A principal bias favoring occupational education in many of these studies that compare the curriculum enrollments of high school completers and leavers

across various high school grades results from the "net flow" effect (cf. Woods & Haney, 1981). The net flow effect arises from shifts in curriculum enrollment in later grades that favor increased occupational curriculum membership among high school completers. Unlike general and academic curricula, concentrations of available occupational programs are frequently available only during grades 11 and 12. Groups identified as dropouts are comprised of individuals who have left school at various points between grades 9-12 and, therefore, include individuals who have not had the same opportunity as the members of groups comprised of high school completers to shift in later grades to an occupational curriculum and be counted as occupational students.

The results of recent studies by the General Accounting Office (1986) and the National Center for Educational Statistics (1985) contrast with the early findings and suggest that participation in occupational education curricula seems to be more associated with increased student dropout than participation in either general or academic curricula. (Also, see Peng & Taki, 1983.) These reports used data on the nationally representative sample of sophomore students from the High School & Beyond Survey (National Opinion Research Center, 1983). The data consisted of the self-report of the students' curriculum when the students were sophomores in high school. Weber (1988a) has reanalyzed the data from the same cohort using a follow-up HS&B survey taken when the students were in the twelfth grade or had dropped out of school, and thus more accurately reflects students' curriculum experiences. His findings revealed that the dropout rate was highest for general curricula students. However, the dropout rate for occupational students still was greater than for those in a college preparatory curriculum.

In considering these findings, it is important to remember that many of the characteristics associated with taking occupational courses (e.g., lower income family background and poorer performance on standard achievement tests) also are associated with the decision not to complete high school (Mertens, Seitz, & Cox, 1982). Given the

influence of a variety of extraneous factors, such as self-selection, on the relationship between dropping out and participation in either academic or occupational education, perhaps a more pertinent research tact would be to study the impact of occupational education on retention of at-risk students. An increasing awareness that occupational education programs play a major role in retaining potential dropouts is emerging primarily due to the results of carefully controlled studies that have adopted this strategy.

Impact on Retention

A recent study by Weber (1986) examined the effect that occupational education has in retaining students by comparing at-risk students that dropout with at-risk students that complete high school. The data for this study was taken from the HS&B data base which is composed of a nationally representative sample of students who were surveyed while they were sophomores in 1980 and again 2 years later in 1982.

A number of contextual, individual, school, and family variables were used in a two-group discriminant analysis to identify individuals with a high propensity to drop out and actually do drop out and those with a high propensity to drop out but do not. Although the overall ability of the discriminant function analysis to correctly classify an individual into either the dropout or the completer group was good, the strength of the function was weak. Thus, unlike differences between dropouts and all other completers combined on contextual, family, individual, and school variables, these results indicate that the difference between the two at-risk groups on such factors was not strong.

Although the high-risk completers and high-risk dropouts did not differ strongly along personal, family, school, or contextual factors, it was apparent that they did differ along a number of occupational curricula experiences. Of the two high risk groups:

1. Completers earned significantly more occupational education credits than did dropouts.
2. Dropouts earned credits in fewer occupational areas which suggests that they did

not explore a full range of vocational offerings.

3. Dropouts had a higher ratio of "exploratory" occupational education credits (e.g., consumer/homemaker, industrial arts) to total credits than did the completers.
4. Significantly more completers had an occupational specialty (i.e., an occupational area in which they earned over 60 percent of their occupational credits).
5. Dropouts tended to earn more work-study credits that do not appear to be directly related to their overall programs.
6. Both groups completed as many career education courses, although exposure to such courses was minimal for either group.
7. More completers reported being in a vocational curriculum.

These findings by Weber suggest a clear impact of occupational education. However, it should be noted that such a conclusion needs to be qualified, since it is not apparent that the "net flow" effect was adequately controlled in this study. Further, as might be expected, completers, since they were in school longer, earned significantly more total credits and enrolled in significantly more courses -- whether academic or occupational -- than did non-completers. Thus, one cannot rule out the influence of at-risk completers having greater access to occupational education courses and specialty programs by virtue of remaining in school until completion.

Other findings by Weber that are consistent with previous research included: fewer tenth grade dropouts than completers reported talking to parents/relatives regarding school plans; significantly more completers reported choosing their own school programs; and dropouts reported that they were working significantly more hours in the tenth grade than did the completers.

The issues qualifying conclusions drawn from Weber's study are addressed in an earlier study by Mertens, Seltz, & Cox (1982). They used interview data collected in 1979 and 1980 from the nationally representative sample of young people between the ages of 14 and

21 (when selected in 1978) that comprised the New Youth Cohort of the National Longitudinal Surveys of the Labor Force Behavior (NLS Youth). Their study is distinguished from much other research on curricula and dropout in a number of important respects.

First, high school transcripts were obtained in 1980 and 1981 for more than one half of the members of the sample, enabling determination of the documented number of credits actually obtained in occupational education. The respondents' curricula were determined from their transcripts, avoiding a critical problem inherent in much research of this nature -- problems associated with self-report of curricula which tend to be discrepant with actual courses taken (cf. Campbell, Orth, & Seitz, 1981). Second, they controlled for the "net flow" effect through use of a regression analysis on separate samples determined by highest grade completed. For example, the effect of occupational courses on completing the tenth grade was examined for those individuals who, in fact, had completed the ninth grade. Similar analyses were completed for grades 11 and 12. Further, in a fashion similar to Weber (1986), they used a regression analysis to obtain two groups of subjects: one with a high probability of dropping out and one with a low probability of dropping out. The model used factors identified in the literature as affecting high school completion. These factors included individual, family, contextual, school, and high school characteristics. To study the retentive impact of occupational education, analyses focused on the group with a high probability of dropping out.

The results suggest that, once personal and contextual variables are controlled, the more occupational education credits earned by a student, the less likely it is that the student will drop out. Although this relationship was found in all grade groups (i.e., 10, 11, and 12), the relationship was significant only for grades 10 and 12, and the size of the coefficients were small. They speculated that the pattern of results were influenced by both the age of the students and the availability of occupational education. Upon entering the tenth grade, most students are not old enough legally (and perhaps not secure enough) to

leave school, and the availability of occupational education may have helped to retain many of these students since it offered them an alternative to an irrelevant, to them, academic curriculum. By the time that the students were prepared to enter the eleventh grade, most were old enough to dropout legally, and the typically limited occupational education program offerings in the tenth grade may not have been a strong enough influence to overcome the legal age and financial pressures. They speculate that the significant retention of occupational students in grade 12 may be due to the greater variety of occupational offerings available in the eleventh grade. Such speculations are interesting in that, to the extent that they are valid, they would appear to suggest the need for broadened occupational course offerings at least by grade 10.

The results of the in-depth studies by Mertens, Seitz, & Cox (1982) and by Weber (1986) are supported by other studies. Perlmutter (1982), for example, compared matched samples of students who applied and were accepted at New York City's vocational high schools and students who applied but were not accepted. Having controlled for individual and demographic differences, she found that 74% of the students accepted at the vocational high schools remained in school after five semesters compared to 59% for students who were not accepted.

Aspects of Occupational Education That Enhance Retention

When considered in combination, the studies in the preceding section suggest a positive relationship between participation in an occupational education curriculum and retention, specifically for the at-risk student. The significant issues that arise at this point involve identifying those factors inherent in occupational education programs that enhance retention of at-risk secondary students and identifying ways in which such retention can be improved.

Weber (1988b) recently synthesized findings from two previous studies in an effort to

address these issues. In one study, Weber (1986) surveyed nine exemplary dropout prevention programs located in urban, suburban, rural and small city settings in a variety of geographical areas of the U.S. in an attempt to isolate common attributes among those programs. The programs surveyed involved single schools, multiple schools, single states, and multiple states. In a second study, Weber, Pulewo, Hurth, Fisch, & Schaffner (1988) conducted a national survey of 2,251 teachers in 120 high schools across the country. This study attempted to compare occupational and non-occupational classroom by focusing on such factors such as resources and materials, teaching practices, instructional content, use of time, types of communication, goals, activities, and decision making.

Inherent Factors

A comparison of the findings of the two studies is interesting. Like exemplary programs, occupational teachers report less absenteeism, theft, and substance abuse than non-occupational teachers. Further, many of the exemplary dropout programs contain in-school occupational instruction. The comparison also yields an indication of factors inherent in occupational education at present that facilitate retention of students. These include:

1. Control. One characteristic of many exemplary dropout programs is the extent to which teachers have authority to design courses and experiences. The survey results suggest that occupational teachers experience more authority and control over their classrooms than do non-occupational teachers.
2. Low teacher/pupil ratio. Like many exemplary dropout programs, occupational education classrooms usually have lower teacher/pupil ratios than found in typical classrooms.
3. Individualization. Exemplary dropout programs and occupational education classes are more likely to provide more individualized instruction and mentoring.
4. Active role. The exemplary dropout programs engage students more actively. This also was a characteristic more likely to be reported for occupational classes than

for non-occupational classes.

5. Recognition. Exemplary dropout programs provide recognition and special awards to students. Greater recognition of student accomplishments is more characteristic of the occupational class than the non-occupational class.

In addition to these characteristics, Weber's (1986) study of exemplary dropout program identifies other characteristics that one would think would be more likely present in occupational education than in non-occupational courses. For example:

6. External ties. Exemplary programs are non-traditional in the sense that they involve motivational aspects such as tying school activities to the work place, daily living, parenting skills, and so forth. Occupational programs, including consumer and homemaking programs, embody similar motivational strategies.
7. Work Experience. Exemplary dropout programs often contain work experience components that are closely tied to other dropout program components and have closer ties to business and industry. Likewise, occupational education programs usually contain cooperative work experiences that, when properly done, are tied directly to students' occupational education concentration.

Undoubtedly, there are other factors inherent in occupational education that could impact retention of at-risk students. However, there are areas identified in the literature where occupational education does not fare as well as non-occupational education in comparisons to exemplary dropout programs. Weber (1986) notes that most of the exemplary dropout programs he studied expend as much as 50% of their effort addressing student's educational/remedial needs, 25% toward resolving their personal needs, and 25% toward work-related needs. While occupational education addresses students' work-related needs, it frequently falls short in addressing the other two. Also, results of Weber et al (1988) suggests that occupational teachers spend less time on basic skills and remediating basic skills and tend to place less emphasis on students' personal problems and on staying

abreast of student needs. Although occupational teachers spend more time counseling students, they spend less time with other staff to resolve student problems. As a group, occupational teachers also place significantly less emphasis on students' personal growth and development as a teaching goal. Occupational teachers also report spending less time with other staff to resolve student problems. These studies point to the critical need to supplement the training that at-risk students receive in the occupational education classroom with personal and occupational guidance programs, a point discussed further below.

Improving the Impact of Occupational Education

The research covered in the present paper points to a number of areas in which occupational education's impact on retaining at-risk students could be improved. In some cases, there is evidence of recent efforts made toward this improvement. One such area is the remediation of basic skills. There are major movements underway across the country to expand the emphasis on basic skill acquisition in the occupational education curriculum. This move reflects the growing recognition that many students acquire basic skills concepts better in application than through a traditional academic approach in a classroom setting. Such students can gain the knowledge they require to operate flexibly in the workplace while, at the same time, experiencing success in school. Such experiences should reduce student frustration and enhance the attraction of school for those students. In so doing, applied academics could address the implications for the failure of the traditional reward structure of schools of Wehlage & Rutter's (1986) finding indicating increases in students' perceived self-control over their own outcomes after dropping out of school.

Like other areas of the country, a good deal of effort is extended in Nevada toward strengthening the academic skills component of many occupational course offerings which also will enable such courses to count as academic credit toward graduation. Two areas, applied math and applied science/technology, have received particular attention. However, the growth of such programs statewide is hampered by conditions of available funding and

priorities that have placed most of the financial burden upon the discretion of each school district.

Other areas for consideration are illustrated in further characteristics noted for exemplary dropout programs by Weber (1986). He found that such programs focus upon dropout prone students who are in the early stages of high school -- prior to when such students normally would become involved in specific occupational education programs. Recommendations for earlier enrollment in occupational education have been proposed to impact at-risk students' self-esteem and sense of self-efficacy in the school setting (Seusy, 1987). It was suggested here that also a broadening of occupational course offerings, especially in the tenth grade, may have a positive impact on retaining students in school.

To provide students early with immediately relevant curricula and to encourage their later entry into occupational education programs, a good deal of current interest in Nevada is being directed toward expanding the junior high and middle school occupational curriculum to include introductory exposure in technology (e.g., biotechnology, information/ communication, and physical technology) and in home and career skills (i.e., career planning and skills in decision making, management, and problem solving applicable to home, school, and workplace). Both components focus on self-efficacy and the latter features personal growth and development as an explicit teaching goal -- a retention factor noted in the previous section as frequently lacking in occupational education. However, it remains to be seen whether such expansions will result in coherent courses for these students and whether these courses will be proposed as a mandated component of the curriculum.

Nevertheless, the advent of earlier, relevant introductory occupational education experiences is likely to encourage later student participation in occupational education. It also opens the possibility of facilitating earlier student options for enrollment in job-specific training programs, especially by the tenth grade. This approach is consistent with the implications of Mertens, Seitz, and Cox's (1982) finding that participation in introductory

occupational education courses in the tenth grade did not have a significant effect on retaining students in the eleventh grade. It also is consistent with Weber's (1986) recommendations for occupational education. He suggests that programs should be encouraged: that heighten awareness of, and involvement in, occupational programs; and that enhance participation in specific occupational programs rather than exploratory courses.

The benefits of exposing students to job-specific training early go beyond the retention of at-risk students. As previously noted, the economic benefits of occupational education are especially apparent for students with a concentration of courses in a specific occupational area. Thus, such a strategy could provide a positive economic impact for the at-risk individual beyond those associated with graduation from high school. It is in this regard that consideration must be given to the impact of the "excellence" reform movement on declines in occupational education enrollments. A recent study by the General Accounting Office (1989) suggests that increased academic course requirements results in students taking fewer courses that teach specific occupational skills. The report notes that "although these requirements may not have prevented students from enrolling in some vocational education, they might have had a disparate effect on the subgroup of students who chose to enroll in concentrated vocational education programs" (p. 49).

Other recommendations for improvement are focused upon an important component of occupational education that has a demonstrable impact on student retention -- work experience. The studies reviewed above suggest that work experience is a critical component of exemplary dropout programs, however they reveal that high levels of work-study are positively associated with students that drop out when compared to at-risk students who complete high school. The critical factor for retention of at-risk students appears to be the extent to which the work experience is related to the at-risk student's in-school training in an occupational education program. A significant issue is whether the student is enrolled in a cooperative occupational education program where there is extensive

coordination between occupational educational training and work-site experience or the student is simply earning credits through work study or work experience for working in the public or private sector. The former appears to aid in the retention of at-risk students, while the latter is associated with dropping out of school. In this regard, Weber (1986) argues that mechanisms should be put in place to insure that work experiences are appropriate and directly related in an identifiable fashion to a specific occupational objective. Mechanisms also should be in place to insure that students are not being kept out of certain vocational programs while being allowed to participate in work-study programs.

Clearly, a broad range of other recommendations for occupational education such as learner-centered and competency-based occupational education, the encouragement of student organizations (NASCOVE, 1987), and countless other approaches are relevant to the issue at hand. An extensive review of evidence and speculation regarding the legion of potential proposals and admonitions for occupational education are beyond the scope of the present paper.

At the same time, however, it is important to recognize, as does Lotto (1982), that "occupational education and work experience are powerful components of a dropout prevention strategy, but they cannot function alone" (p. 49). A number of reviews are in agreement with this conclusion (e.g., Weber & Sechler, 1988; Hamilton, 1986; Freeland, 1986; Urban School Districts' Task Force on Dropouts, 1985; Wehlage, 1983). Again, Weber (1986) identifies a number of important general components that lie beyond the occupational classroom, including more effective methods of identifying potential dropouts, individual education plans for at-risk students, programs to promote parental involvement, and, as noted in the preceding section, greater use of extensive counseling/guidance programs to identify and work with potential dropouts.

In the proposal of expanded counseling and guidance services for the at-risk student, it is important that the services not be restricted to personal and academic difficulties.

Comprehensive career guidance is an additional, relevant direction for expanding counseling services that would impact at-risk, as well as other, students. This aspect of the educational guidance program bears mention in the present discussion since it is especially relevant to the impact of occupational education (see, for example, Drier & Gysbers, 1989) and is consistent with Weber's call for greater career exploration experiences for at-risk students. In addition to clarifying career goals and channeling some students, including those at-risk, into occupational training programs, career guidance provides students with a clearer picture of the need for, and relevance of, in-school education and training experiences in preparation for the pursuit of a self-selected career.

Summary and Conclusions

The current national dropout rate during grades 9-12 is estimated at between 25% and 30%. However, difficulties exist in obtaining accurate, reliable dropout rate data, and better methods for identifying dropouts and reliably assessing local rates of dropping out of school are necessary in order to adequately allocate funds and services to combat the problem.

Although estimates of dropout rates are lower today than in earlier eras, the economic, social, and personal impact of dropping out of school has become increasingly severe in modern American society. Economic deficits that result from dropping out include reduced personal income, loss of tax revenue, and increased welfare costs. Higher incidence of crime and imprisonment among dropouts also has been reported. Personal factors associated with dropping out include alienation, frustration, disappointment, and an increase in a number of health related disorders.

Extensive research has isolated various demographic, familial, personal, and education-related factors associated with dropping out of school (see pp. 6-7). The presence of such factors is valuable in identifying students who are at risk of dropping out. However, the extent, degree, or strength of such factors does not indicate which students are likely to

dropout from among those identified as at-risk.

One factor that does discriminate between at-risk students who complete high school and those who drop out is participation in occupational education programs. Many studies that compare dropouts' participation in academic, general, and occupational curricula with the large heterogeneous remainder of students provide conflicting results and are fraught with methodological inadequacies. However, by focusing on at-risk students and comparing curricular participation for those who drop out and those who do not, researchers have found a positive relationship between retention and the amount of occupational courses taken, especially courses that provide specific job skills.

Evidence suggests that some important characteristics for at-risk student retention are more prevalent in occupational classrooms than in academic ones. Those characteristics include:

- greater teacher control over courses and classroom experiences,
- lower teacher/student ratios,
- more individualized instruction and mentoring,
- a more active role for students,
- greater recognition of student achievements,
- motivational advantages from tying school activities to external applications, and
- work experience components that are tied directly to classroom content.

Although a number of proposals for improving the retentive quality of occupational education are mentioned in the present paper, those derived from the pattern of results that emerge in the research reviewed here include:

- continued encouragement of the current emphasis placed on academic skill acquisition in the occupational education curriculum,
- encouraging career exploration and guidance programs and early, relevant introductory occupational education experiences,

- facilitating broader student options for enrollment in job-specific training courses by the tenth grade, and
- putting mechanisms into place to encourage contingent enrollment in a related occupational education class for work study students and to insure that work-study experiences are appropriate and related to specific occupational education objectives.

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